



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

PS

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/424,684   | 11/29/1999  | KIYOFUMI INANAGA     | 7246/57889          | 8380             |
| 530  | 7590        | 03/28/2006           | EXAMINER            |                  |
| LERNER, DAVID, LITTENBERG,<br>KRUMHOLZ & MENTLIK<br>600 SOUTH AVENUE WEST<br>WESTFIELD, NJ 07090 |             |                      | PENDLETON, BRIAN T  |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2615                |                  |

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                |                  |
|------------------------------|--------------------------------|------------------|
| <b>Office Action Summary</b> | Application No.                | Applicant(s)     |
|                              | 09/424,684                     | INANAGA ET AL.   |
|                              | Examiner<br>Brian T. Pendleton | Art Unit<br>2644 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 21 December 2005.
- 2a) This action is **FINAL**.                                   2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,2 and 8 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2 and 8 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 November 1999 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 2, and 8 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim includes the phrase "...including a sound field image signal, for said distributing circuit field image signal to produce at least two processed signals for adding to at least some of said input audio signals..." which is unclear.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome et al, US Patent 6,850,621 in view of Matsuo et al, US Patent 6,553,121. Sotome et al teach a three-dimensional sound reproduction apparatus in figure 15 comprising input audio signals N, L+C,

and R+C. The signals contain left and right channel directional components. There is a distribution circuit which processes the N channel through phase shifters 405 and 406 and adds those signals to input audio signals L+C and R+C at adders 407 and 408, respectively. There is sound localization unit 30 and crosstalk cancellation unit 20 for processing the downmixed audio signals from the adders 407 and 408 into M=2 output signals having an equivalent sound field of M electrical acoustic converting units. The invention of Sotome et al is directed toward sound reproduction over loudspeakers, as illustrated in the figure, and does not disclose a second signal processing circuit for processing the audio signals corresponding to transfer functions from M electric acoustic converting units to both ears of the listener. Matsuo et al disclose in figure 2 an apparatus comprising a sound processing unit (transfer functions 11-14) and transfer characteristics 15 and 16 for generating a sound image which is localized outside of the head of the user wearing headphones 5,6. Thus, Matsuo et al teach a second signal processing circuit for processing the audio signals corresponding to transfer functions from M electric acoustic converting units to both ears of a listener. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Sotome et al and Matsuo et al for the purpose of providing a three-dimensional sound field to a headphone user, as it was well known in the art to do so. Claim 1 is met.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome et al in view of Matsuo et al as applied to claim 1 above, and further in view of Griesinger. As stated above, it was obvious to combine Sotome et al and Matsuo et al to have an apparatus comprising a distributing circuit for combining a sound field image signal to input audio signals, a first signal processing circuit for localization, and a second signal processing circuit for localizing the

output from the first signal processing circuit outside of the head of a headphone user. The combination does not disclose varying the amount of the sound field image signal combined with the input audio signals. Griesinger discloses a signal encoder in figure 11 for steering front signals and improving separation for simultaneous side inputs comprising variable attenuators 290-293 for varying amounts of sound images corresponding to the left channel directional components as sound image components. It would have been obvious to one of ordinary skill in the art at the time of invention to combine Sotome et al and Matsuo et al with the teachings of Griesinger for the purpose of improving the sound quality with respect to front signals.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome et al in view of Matsuo et al as applied to claim 1 above, and further in view of McGrath. The combination of Sotome et al and Matsuo et al does not disclose detecting means for detecting the motion of the head of the listener, controlling means for controlling the signal processing corresponding to the detecting means and wirelessly supply the output signals. McGrath teaches a method and apparatus of processing spatialized audio comprising audio inputs, signal processor 2, signal processor 6 and transmitter 5 and receiver 9 for detecting the motion of the head of the listener. Signal processing in unit 6 is controlled based on the motion of the head of the listener. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Sotome et al and Matsuo et al to include the head tracking apparatus of McGrath for the purpose of improving the realism of listening to audio with headphones. With respect to wirelessly supplying the output signals, it was notoriously well known in the art at the time of invention to use wireless signals to increase the mobility of the listener.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (571) 272-7527. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

btp



**BRIAN TYRONE PENDLETON**  
PRIMARY EXAMINER